

What is claimed is:

1. An apparatus for providing a temperature compensated reference signal, comprising:
 - a bang-gap cell that is arranged to provide a first signal that has a first temperature response profile;
 - a PTAT circuit that is arranged to selectively provide a second signal that has a second temperature response profile;
 - a feedback circuit that is arranged to selectively activate the PTAT circuit; and
 - a resistor circuit that is arranged in cooperation with the band-gap cell and the PTAT circuit such that the temperature compensated reference signal has a third temperature response profile that is determined by the first temperature response profile and the second temperature response profile.
2. The apparatus of claim 1, wherein the first temperature response profile is different from the second temperature response profile such that the third temperature response profile
3. The apparatus of claim 1, wherein the first signal and the second signal are currents, and wherein the resistor circuit is arranged to combine the currents that are associated with the first and second signals.
4. The apparatus of claim 1, wherein the bandgap cell comprises:
 - a first bipolar device;
 - a second bipolar device;
 - a first resistor that is coupled between a first sense node and the first bipolar device;
 - a second resistor that is coupled between the first sense node and a common node;
 - a third resistor that is coupled between a second sense node and the common node; and

an error amplifier that is responsive to signals from the first sense node and the second sense node, wherein the resistor circuit is coupled between an output node of the error amplifier and the common node, and wherein the PTAT circuit is coupled to the common node.

5. The apparatus of claim 4, wherein the first bipolar device and the second bipolar device are ratio scaled with respect to one another.
6. The apparatus of claim 1, wherein the feedback circuit comprises at least one of: a passive feedback circuit, an active feedback circuit, a voltage divider circuit, a gain scaling circuit, a resistor divider circuit, a capacitive divider circuit, and a stacked diode circuit.
7. The apparatus of claim 1, wherein the feedback circuit corresponds to a voltage divider circuit that senses the output of the band-gap cell.
8. The apparatus of claim 1, wherein the PTAT circuit comprises at least one of: a voltage reference circuit that is configured to provide the second signal as a voltage, and a current reference circuit that is configured to provide the second signal as a current.
9. The apparatus of claim 1, wherein the PTAT circuit includes a bipolar junction device that is arranged to provide the second signal as a current that is proportional to absolute temperature.
10. The apparatus of claim 1, wherein the PTAT circuit includes a bipolar junction device that is arranged to provide the second signal as a voltage that is proportional to absolute temperature.
11. The apparatus of claim 1, wherein the PTAT circuit is arranged to activate when an operating temperature associated with the apparatus reaches a temperature trip point.

12. The apparatus of claim 1, wherein the band-gap cell is referenced from at least one of: a high supply signal, a low supply signal, and a ground reference signal.
13. The apparatus of claim 1, wherein the temperature compensated reference signal corresponds to at least one of a current and a voltage.
14. An apparatus for providing a temperature compensated reference signal, comprising:
 - a bang-gap cell means that is arranged to provide a first signal that has a first temperature response profile;
 - a PTAT means that is arranged to selectively provide a second signal that has a second temperature response profile;
 - a sense means that is arranged to sense an output of the band-gap cell means; and
 - a signal combination means that is arranged to adjust the temperature compensated reference signal in response to the first signal and the second signal such that the temperature compensated reference signal has a third temperature response profile that is determined by the first temperature response profile and the second temperature response profile.
15. The apparatus of claim 12, wherein the PTAT means at least one of: a voltage reference means that is configured to provide the second signal as a voltage, and a current reference means that is configured to provide the second signal as a current.
16. The apparatus of claim 12, wherein the PTAT means is arranged such that the second temperature response profile is proportional to absolute temperature.
17. The apparatus of claim 12, wherein the band-gap cell means is reference from at least one of: a high supply signal, a low supply signal, and a ground reference signal.

18. The apparatus of claim 12, wherein the temperature compensated reference signal corresponds to at least one of a current and a voltage.

19. A method for providing a temperature compensated reference signal, comprising:
providing a band-gap voltage from a band-gap cell that has a first temperature profile;

monitoring the band-gap voltage to provide a feedback signal;

coupling the feedback signal to a PTAT circuit that has a second temperature profile;

activating the PTAT circuit when an operating temperature associated with the band-gap cell reaches a temperature trip-point; and

coupling a signal from the PTAT circuit to the band-gap cell when the PTAT circuit is active such that a third temperature profile is provided to the band-gap voltage.

20. The method of claim 19, wherein the first temperature profile corresponds to a band-gap curve, the second temperature profile corresponds to a proportional to absolute temperature curve, and the third temperature profile corresponds to a curvature corrected band-gap curve.